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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,637	07/08/2002	Wolfgang Krumm	298-149	8673

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EXAMINER	
PATEL, VINIT H	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,637	KRUMM ET AL.	
	Examiner	Art Unit	
	Vinit H. Patel	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *03 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muhlen et al., WO 99/31197, in view of Deglise et al., US Patent No. 4,568,362.

Regarding claim 1 Muhlen discloses a method for the pyrolysis and gasification of organic substances or mixtures of organic substances utilizing an apparatus comprisinga pyrolysis reactor (403), a fluidized-bed firing (6) for the pyrolysis residue, a reaction zone (4) for the pyrolysis gases (5), and a fluidized-bed material (105) circulation between the combustion fluidized-bed (3) and the pyrolysis reactor (403), said pyrolysis reactor (403) being a shaft or a rotary reactor, comprising a sluice (410) for the introducing application material (401) there-into, an inlet for the fluidized bed material into said pyrolysis reactor (403) from the combustion fluidized bed (6), disposed next to the combustion fluidized bed (6); the shaft pyrolysis reactor (403) having a transport apparatus (409) for transporting a mixture of solid pyrolysis residue and the circulating fluidized bed material (414) into the combustion fluidized bed (6) at or near a bottom of said fluidized bed (6) and disposed at a lower end of said pyrolysis reactor (403); and said reaction zone (4) comprising a heat transfer member (12) comprising a heat transfer member connected to the pyrolysis reactor (403) for

receivinq the pyrolysis gases (5) from the pyrolysis reactor (403) and to which waste qases (116) from the combustion fluidized bed (6) are supplied for heat exchange with the pyrolysis gases (5), wherein the organic substances are introduced into a drying and pyrolysis reactor (403) in which the organic substances are brought into contact with the fluidized-bed material (414) of the combustion fluidized-bed (6) or in which the organic substances are brought into contact with the fluidized-bed material (414) and the reactor wall of the combustion fluidized-bed (6), whereby a drying and pyrolysis take place, in which the organic substances are transformed into steam from the drying and into pyrolysis products (P9/L9-P10/L15), where the pyrolysis product consists of gases with condensable substances and solid carbonaceous residue; the solid carbonaceous residue or the solid carbonaceous residue and portions of the steam and of the pyrolysis gases with condensable substances and the fluidized-bed material are guided back into the combustion fluidized-bed (P9/L9-P10/L15) in which the carbonaceous residue of the organic substances is incinerated, the fluidized-bed material is heated up and is again guided into the pyrolysis reactor (403); the steam from the drying and the pyrolysis gases (P9/L9-P10/L15) are subsequently treated with condensable substance in a further reaction zone such that a product gas (23) with a high calorific value is available; the drying and pyrolysis are carried out in at least one or more pyrolysis reactors (Figs. 1-4); the drying and pyrolysis are preferably carried out in two or more pyrolysis reactors (403) which consists of two or more moving bed reactors or of two or more rotary reactors or of rotary reactors and moving bed reactors; the combustion fluidized-bed (6), in which the pyrolysis residues are incinerated, is operated as a

stationary fluidized-bed; no gasification agent or, optionally, a gasification agent such as steam, oxygen or air or a mixture thereof is supplied to the pyrolysis gases (P8/L3-P10/L15); the pyrolysis gases are led into an indirect heat exchanger.(Figs. 1 & 4) in which they optionally react with the gasification agent (P8/L3-P10/L15); the firing waste gases (18); the fluidized-bed material (3) consists only of the ash of the organic substances, or of the ash and unburned carbonaceous residues of the organic substances, or of the ash of the organic substances and of additional fluidized material, or of the ash and unburned carbonaceous residues of the organic substances and of additional fluidized material (P9/L9-14; P7/L9-P10/L15; Figs. 1-4).

However, Muhlen does not explicitly disclose the combustion fluidized bed having an overflow situated at or near a top of said fluidized bed and arranged for transferring the circulating fluidized bed material into the shaft pyrolysis reactor (1) and to be constantly filled with the circulating fluidized bed material (35). Deglise disclose that utilization of a lateral overflow for evacuating surplus fluidized bed material (C2/L28-40) and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Muhlen with Deglise for the purpose to provide an evacuation mechanism for surplus fluidized bed particles that accumate during use (C2/L28-40).

Regarding claim 2, Muhlen discloses wherein the pyrolysis is carried out at a temperature of 450C to 750C (P2/l24-P3/L3).

Regarding claim 3, Muhlen discloses the product gas is guided back in the pyrolysis reactor (P9/L9-14; P7/L9-P10/L15; Figs. 1-4).

Regarding claim 4, Muhlen discloses gasification agents such as steam, oxygen or air or a mixture thereof are added into the pyrolysis reactor (P9/L9-14; P7/L9-P10/L15; Figs. 1-4).

Regarding claim 5, Muhlen discloses the surface of the reactor wall of the combustion fluidized-bed has any closed geometrical shape on the side of the pyrolysis reactor and the combustion fluidized-bed (Fig. 4).

Regarding claim 6, Muhlen discloses the reactions of the pyrolysis gases with the gasification agent are carried out at temperatures of 800C to 1,050C (P9/L9-14; P7/L9-P10/L15; Figs. 1-4).

Regarding claim 7, Muhlen discloses the reactions of the pyrolysis gases with the gasification agent are carried out in the presence of a catalyst (P4/L1-15).

Regarding claim 8, Muhlen discloses the reaction of the pyrolysis gases with the gasification agent are carried out in a solid bed of catalyst material (P4/L1-15).

Regarding claim 9, Muhlen discloses the reactions of the pyrolysis gases with the gasification agent are carried out in a fluidized-bed of catalyst material (P4/L1-15; P9/L9-14; P7/L9-P10/L15).

Regarding claim 10, Muhlen discloses the reactions of the pyrolysis gases with the gasification agent are supplied in the presence of a catalyst added to the pyrolysis gas in the entrained flow (P4/L1-15; P9/L9-14; P7/L9-P10/L15).

Regarding claim 11, Muhlen discloses an apparatus comprisinga pyrolysis reactor (403), a fluidized-bed firing (6) for the pyrolysis residue, a reaction zone (4) for the pyrolysis gases (5), and a fluidized-bed material (105) circulation between the

combustion fluidized-bed (3) and the pyrolysis reactor (403), said pyrolysis reactor (403) being a shaft or a rotary reactor, comprising a sluice (410) for the introducing application material (401) there-into, an inlet for the fluidized bed material into said pyrolysis reactor (403) from the combustion fluidized bed (6), disposed next to the combustion fluidized bed (6); the shaft pyrolysis reactor (403) having a transport apparatus (409) for transporting a mixture of solid pyrolysis residue and the circulating fluidized bed material (414) into the combustion fluidized bed (6) at or near a bottom of said fluidized bed (6) and disposed at a lower end of said pyrolysis reactor (403); and said reaction zone (4) comprising a heat transfer member (12) comprising a heat transfer member connected to the pyrolysis reactor (403) for receiving the pyrolysis gases (5) from the pyrolysis reactor (403) and to which waste gases (116) from the combustion fluidized bed (6) are supplied for heat exchange with the pyrolysis gases (5) (P9/L9-14; P7/L9-P10/L15; Figs. 1-4).

However, Muhlen does not explicitly disclose the combustion fluidized bed having an overflow situated at or near a top of said fluidized bed and arranged for transferring the circulating fluidized bed material into the shaft pyrolysis reactor (1) and to be constantly filled with the circulating fluidized bed material (35). Deglise disclose that utilization of a lateral overflow for evacuating surplus fluidized bed material (C2/L28-40) and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Muhlen with Deglise for the purpose to provide an evacuation mechanism for surplus fluidized bed particles that accumate during use (C2/L28-40).

Regarding claim 12, Deglise discloses wherein fluidized-bed material can be removed from the combustion fluidized bed at least at one point or at a plurality of points and can be guided into the pyrolysis sector (C2/L28-40).

Regarding claim 13, Deglise discloses wherein fluidized bed material can be removed from the combustion fluidized bed (3) at least at one point or at a plurality of points by means of one or more overflows and can be guided into the pyrolysis reactor (C2/L28-40).

Regarding claims 14, 17 and 18, Muhlen discloses wherein refractory substances can be added to form a fluidized bed (P5/L1-P6/L23).

Regarding claims 15,19 and 20, Muhlen discloses wherein the components of the application material which cannot be burned and which cannot be gasified can be used to form a fluidized bed (P5/L1-P6/L23).

Regarding claim 16, Deglise discloses wherein fluidized bed material can be removed from the combustion fluidized bed' (3) at least at one point or at a plurality of points by means of one or more overflows and can be guided into the pyrolysis reactor (C2/L28-40).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinit H. Patel whose telephone number is (571) 272-0856. The examiner can normally be reached on 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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